

**Pre Calculus
Unit 3 Test Review**

**Name:
Date:**

I Solve exponential equations:

$$4^{3x} = 8^{x-1}$$

$$3^{2-x} = \frac{1}{81}$$

$$x = -1$$

$$x = 6$$

Self assess this goal: ☐ Got it ☐ Needs Work ☐ No Clue

II Rewrite in exponential form.

$$\log_4 .0625 = -2$$

$$\ln .2873 = a$$

$$4^{-2} = .0625$$

$$e^a = .2873$$

Self assess this goal: ☐ Got it ☐ Needs Work ☐ No Clue

III Rewrite in Logarithmic Form

$$32^{1/5} = 2$$

$$e^{2.3} = a$$

$$\log_{32} 2 = 1/5$$

$$\ln a = 2.3$$

Self assess this goal: ☐ Got it ☐ Needs Work ☐ No Clue

IV Evaluate Logarithmic Expressions (you do not need a calculator)

$$\log_5 \frac{1}{125}$$

$$\log_{2/3} \frac{2}{3}$$

$$-3$$

$$1$$

Self assess this goal: ☐ Got it ☐ Needs Work ☐ No Clue

V Solve logarithmic equations using properties of logs

$$\log_{16} \frac{3}{4}$$

$$\log_9(x^2 + 4x) = \log_9(x + 4)$$

$$\frac{\log(\frac{3}{4})}{\log(16)} = -.1037$$

$$(x + 4)(x - 1) = 0, \quad x = 1$$

$$\log_8(m + 2) + \log_8(m) = \log_8 15$$

$$\log_2(x + 4) + \log_2(x - 3) = 3$$

$$m^2 + 2m = 15$$

$$(x + 4)(x - 3) = 8$$

$$(m + 5)(m - 3) = 0$$

$$x = 4$$

$$m = 3$$

Self assess this goal: ☐ Got it ☐ Needs Work ☐ No Clue

VI Solve exponential equations using logarithms

$$7^{x+1} = 6^x$$

$$5^{x-2} = 4^{x-3}$$

Self assess this goal: ☐ Got it ☐ Needs Work ☐ No Clue

VII Solve equations with natural logarithms

$$3 = 8e^{-2x}$$

$$5 \ln 7x = 12$$

$$\frac{\ln(\frac{3}{8})}{-2} = x$$

$$\frac{5}{e^{12}} = \frac{1}{7}$$

Self assess this goal: ☐ Got it ☐ Needs Work ☐ No Clue